

Preliminary plant communities with respect to their location

By Nathan A.M. (2004)

1. Miombo woodlands in Katavi include Hilltop Miombo and Mixed Miombo.

There are two types of Miombo woodland in Tanzania, the wet and the dry. The Miombo woodland of Katavi is that of dry woodlands. As per Rodgers (1979) Miombo is “a deciduous unarmed woodland occurring in the unimodal rainfall areas of East and Central Africa on old acidic sand soils”. It is characterised by Caesalpiniaceae, Mimosaceae, Papilionaceae (all Fabaceae family) and Combretaceae. The ground cover varies from dense, coarse grass growth to a sparse cover. Species composition often dominated by *Diplorhynchus*, *Condylocarpon* and *Combretum*, *Brachystegia* and *Acacia* (Rodgers: 1979).

1.a. Hilltop Miombo is dominated by *Julbernardia globiflora*. Most of the hills and the escarpment peaks (approx. 1500 m a.s.l.) in the Katavi-Rukwa/Lukwati are dominated by the Miombo species, i.e. *Julbernardia globiflora* which forms a good crown 15m tall on top of the hills followed by the sedges which are not palatable to the wild animals (*Fimbristylis dichotoma*, *Fuirena bachyrriza*, *Fuirena umbellata*, *Cyperus pulchellus*).

1.b. Mixed Miombo woodland is common in the elevated areas with leached acidic red soils, like Mlele, Kasege and Ufipa escarpments, Mlele and Kasege Plateau, Kaselami, Kapimbye and Igongwe hills, Malimba highlands, Chansima and Isote Hills.

Common species are: *Brachystegia spiciformis*, *Brachystegia boehmii*, *Brachystegia taxifolia*, *Brachystegia angustistipulata*, *Brachystegia longifolia*, *Brachystegia glaberrima*, *Julbernardia globiflora*, *Isobertia angolensis*, *Dalbergia melanoxylon*, *Lonchocarpus capassa*, *Sclerocarya birrea*, *Combretum collinum*, *Combretum psidioides*, *Combretum zeyheri*, *Terminalia kaiserana*, *Acacia tortilis*, *Acacia sieberiana*, *Acacia polyacantha*, *Tamarindus indica*, *Sterculia quinqueloba*, *Commiphora africana*, *Cassia abbreviata*, *Azalia quanzensis*, *Pterocarpus angolensis*, *Vangueria madagascariensis*, *Strychnos madagascariensis*, *Bobgunia madagascariensis*, *Kigelia africana*, *Faidherbia albida*, *Borassus aethiopum*, *Diplorhynchus condylocarpon*, *Hyphaene compressa* and *Azanza garckeana*.

Grasses mostly common are *Aristida kelleri*, *Brachiaria brizantha*, *Digitaria brazzae*, *Eragrostis patens*, *Melinis repens*, *Sporobolus sanguineus*, *Themeda triandra*, *Chloris virgata* and the sedge *Cyperus involucreatus*.

In the shade of the various woodlands *Themeda triandra*, *Pennisetum polystachyon*, *Chloris gayana*, *Dactyloctenium aegyptium*, *Digitalia brazzae* and *Panicum repens* occur.

2. Transition zone riverine woodlands to Miombo (escarpment foothills)

This is typical mixed woodland with scattered grassy plains and drainage lines with undulating hills. The grass plains can be drainage lines or a closed pan without an outlet, where water accumulates for some periods of the year, conditions which permits the growths of trees.

The woodlands are dominated by *Terminalia kaiserana*, *Acacia tortilis*, *Sterculia quinqueloba*, *Diplorhynchus condylocarpon*, *Dichrostachys cinerea*, *Sclerocarya birrea* followed by *Combretum psidioides*, *C. collinum*, *Isobertia angolensis*, *Pterocarpus angolensis*, *Azalia quanzensis*, *Lonchocarpus capassa*, *Strychnos cucculoides*, *Diospyros fischeri*, *Kigelia africana*, *Pseudolachnostylis maprouneifolia*, *Combretum molle*, *Markhamia obtusifolia*, *Commiphora africana*, *Ziziphus mucronata*, *Dalbergia melanoxylon*, *Baphia massaiensis*, *Grewia bicolor*, *Grewia platyclada*, *Ficus sycomorus*, *Bobgunia madagascariensis*, *Combretum zeyheri*, *Azanza*

garckeana, *Borassus aethiopum*, *Acacia polyacantha*, *Khaya anthotheca* and *Hyphaene compressa*.

The grassed areas are dominated by species of *Hyparrhenia diplanda*, *Themeda triandra*, *Oryza longistaminata*, *Eragrostis setulifera* and *Echinochloa pyramidalis*.

3. Mixed woodland with scattered grassy plains (dambos)

This kind of vegetation type is a mosaic of woodland and small patches of grassland.

The grass plains can be drainage lines or a closed pan without an outlet, where water accumulates for some periods of the year, conditions which permits the growths of trees. In Zambia these grassy areas within woodlands are called “dambos”. The trees surrounding the dambos attain the height of 15 m with their crowns sometimes forming interlaced deciduous canopy. The trees appear to be less tall than in the Mixed Woodlands (plant community 8).

The woodlands are dominated by *Terminalia kaiserana*, *Acacia tortilis*, *Sterculia quinqueloba*, *Diplorhynchus condylocarpon*, *Dichrostachys cinerea*, *Sclerocarya birrea* followed by *Combretum psidioides*, *Combretum collinum*, *Isobertinia angolensis*, *Pterocarpus angolensis*, *Azelia quanzensis*, *Adansonia digitata*, *Lonchocarpus capassa*, *Strychnos cucculoides*, *Diospyros fischeri*, *Kigelia africana*, *Pseudolachnostylis maprouneifolia*, *Combretum molle*, *Markhamia obtusifolia*, *Commiphora africana*, *Ziziphus mucronata*, *Dalbergia melanoxyton*, *Baphia massaiensis*, *Grewia bicolor*, *Grewia platyclada*, *Ficus sycomorus*, *Bobgunia madagascariensis*, *Combretum zeyheri*, *Azanza garckeana*, *Borassus aethiopum* and *Hyphaene compressa*.

The grassed areas are dominated by species of *Hyparrhenia diplanda*, *Themeda triandra*, *Oryza longistaminata*, *Eragrostis setulifera* and *Echinochloa pyramidalis*.

4. Thickets

Thickets are occasional in occurrence. Generally thickets are characterized by seasonal climbers and few tree species like *Dalbergia melanoxyton*, *Dombeya cincinnata*, *Ximenia caffra*, *Friesodielsia obovata*, *Monanthotaxis buchmanii*, *Carissa edulis*, *Markhamia zanzibarica*, *Lannea schimperii*, *Strychnos cucculoides*, *Diospyros fischeri*, *Baphia massaiensis*, *Pseudolachnostylis maprouneifolia*, *Combretum molle*, *Grewia bicolor*, *Canthium lactescens*, *Commiphora africana*. They occur in some parts of Ilyandi sandridge, Kanyamkaa, Igongwe, Ikuu, Mlele, Ngolima, Kapapa and Kawale.

5. Bushland with emergent trees (Magogo, Lake Chada, Lake Katavi)

Bushlands are more common with a continuous stand of trees. Bushland varies from place to place in the protected areas and is rich in species. Bushes have no clearly defined boles and may be from 2 m to 5 m tall, rarely with small trees. Tall trees such as *Adansonia digitata*, *Delonix elata* and rarely *Lonchocarpus capassa*, *Terminalia kaiserana*, *Combretum erythrophyllum*, *Diospyros fischeri* and *Euphorbia ingens* may be present especially towards Lake Rukwa. Close to floodplains also *Dichrostachys cinerea* can dominate the shrublayer.

6. Riverine Forest

In some parts of the protected areas Riverine Forest with a very limited amount of Swamp Forest occurs. Remnants of Moist Montane Riverine Forest, especially in part of the Ufipa and Mlele escarpments exist. In these steep or narrow valleys riverine vegetation tends to be forest like. The Riverine Forest consists of a continuous stand of trees which attains a height up to 25 m with crowns touching or intermingling, sometimes freely interlaced with lianas. The canopy is not very dense nor does it consist of several distinct layers. Epiphytes such as orchids and ferns are the

evident. The trees have simple or buttressed boles and some of them are in full leaf all the year around. The forest floor is covered with herbs and shrubs where the light penetrates.

Riverine Forest and Swamp Forest occurs along the banks of the Suguru, Msaginia, Yeye, Wugu, Kapapa, Katuma, Rungwa and Lukima Rivers.

Its chief components are: *Ficus sycomorus*, *Ficus lutea*, *Ficus glumosa*, *Newtonia buchananii*, *Albizia gummifera*, *Anthocleista grandiflora*, *Olyra latifolia*, *Keetia gueinzii*, *Raphia farinifera*, *Parinari excelsa*, *Syzygium cordatum*, *Brachystegia taxifolia*, *Mimusops zeyheri*, *Baphia capparidifolia*, *Oncoba spinosa*, *Acacia sieberiana*, *Acacia polyacantha*, *Khaya anthotheca*, *Rauvolfia caffra*, *Senna didymobotrya* and *Borassus aethiopum*, *Syzygium cordatum*, *Gardenia imperialis*.

7. Mixed Woodland

Nearly three quarters of the protected area is covered by this kind of vegetation. The tree layer is dense to open; their crowns do not form a thickly interlaced canopy. Individual trees attain a height of about 25 m and often reach diameters at breast height of more 80 cm. These woodlands are semi deciduous to deciduous. Compared to plant community 3 trees are taller and trunks are thicker.

The woodland can be dominated by *Sclerocarya birrea*, *Acacia tortilis* *Borassus aethiopum*, *Sterculia quinqueloba* or *Dicrostachys cinerea*. Scattered evergreen shrubs are present but not conspicuous. Grasses and herbs consist of perennial and annual species, the former, usually with a tufted habit of growth rarely above 1 m tall. These occur in Llyandi sandridge, and Rukwa Highlands.

Associated species are: *Isoberlinia angolensis*, *Dalbergia melanoxyton*, *Lonchocarpus capassa*, *Sclerocarya birrea*, *Pterocarpus angolensis*, *Combretum collinum*, *C. psidioides*, *C. zeyheri*, *Terminalia kaiserana*, *Acacia tortilis*, *A. sieberiana*, *A. polyacantha*, *Tamarindus indica*, *Sterculia quinqueloba*, *Commiphora africana*, *Cassia abbreviata* *Afzelia quanzensis*, *Lonchocarpus capassa*, *Kigelia africana*, *Faidherbia albida*, *Borassus aethiopum*, *Hyphaene compressa*, *Azanza garckeana*, *Diplorhynchus condylocarpon*, *Vangueria madagascariensis*, *Strychnos madagascariensis*, *Bobgunia madagascariensis* and *Ziziphus mucronata*.

8. Riverine woodland

This is occasional along the rivers in the protected areas especially along Katuma river in Katavi National Park. It is characterized by trees, shrubs and lianas.

The key species are: *Ficus glumosa*, *Terminalia Kaiserana*, *Sterculia quinqueloba*, *Borassus aethiopum*, *Hypheane compressa*, *Ficus sycomorus*, *Khaya anthotheca*, *Cordia goetzei*, *Cordia sinensis*, *Sclerocarya birrea subsp. Caffra*, *Annona senegalensis*, *Acacia polyacantha subsp. Compylacantha*, *Faidherbia albida* and *Mimosa pigra*.

9. Seasonally inundated grass dominated formations

9a. Flood plains

These are vast flood plains with alluvium nutrient rich soils and most productive areas. This kind of vegetation evolved through the seasonal flooding and water logged situation. It is matter of frequent fires. This land covered usually by perennial grasses and other herbs. Evergreen and deciduous, grouped or scattered, armed or unarmed trees and shrubs cover less than 5%. Tree and shrub species are *Combretum erythrophyllum*, *Acacia tortilis*, *Faidherbia albida*, *Tamarindus indica*, *Grewia platyclada*, *Voacanga africana*, *Acacia polyacantha*, *Acacia sieberiana*, *Kigelia africana*, *Terminalia kaiserana*, *Erythrina abyssinica*, *Dicrostachys cinerea*, *Borassus aethiopum* and *Hyphaene compressa*

These grass dominated communities include for example *Echinochloa pyramidalis* (Katisunga mbuga) and *Sporobolus fimbriatus* (Lake Chada).

Other species occurring in the grasslayer comprise: *Echinochloa pyramidalis*, *Sporobolus fimbriatus*, *Echinochloa crus-pavonis*, *Pennisetum polystachyon*, *Themeda triandra*, *Hypparhenia hirta*, *Oryza longistaminata*,

It is observed in Ngolima, Kawale, Kaporula, Katisunga, Mpunga, Nsakasa, Chada and Katavi plains.

9b. Seasonal lakes

The Katavi National Park has two seasonal lakes i.e. Lake Katavi and Lake Chada. The grasses dominate the aspect though the trees and shrubs are always conspicuous, the former may be densely procumbent or matted, or may grow in patches. They may completely cover the surface of the ground or be thinly scattered so that the soil is easily visible between the grass clumps or mats.

They are dominated by grasses, eg. *Hypparhenia hirta*, *Echinochloa pyramidalis*, *Echinochloa crus-pavonis*, *Sporobolus fimbriatus*, *Sporobolus pyramidalis*, *Themeda triandra*, *Heteropogon contortus*, *Digitaria ternata*, *Pennisetum polystachyon*, and occasional trees also occur along the edges of the lakes (cf. floodplains).

9c. Transition zone lake/floodplain-woodland

This is common in Katavi National Park especially the areas at the seasonal lakes Katavi and lake Chada. It consists of a continuous grass layer, like at Lake Katavi the area is between Ilyand sandridge and Lake Katavi it consists of the scattered tree species of *Faidherbia albida*, *Acacia sieberiana*, *Borassus aethiopum*, *Kigelia africana*, *Voacanga africana*.

Termite hills can be common along Katisunga floodplain.

The grasslayer is short (up to 30 cm) and dominated by the species of *Sporobolus fimbriatus* and *Echinochloa pyramidalis*. *Tribulus terrestris*, *Polygonum salsifolium*.

9d. Freshwater swamps at springs and adjacent to rivers

This kind of vegetation is common around Ngolima paradise and Ikuu springs as well as riverine localities. This type can be a permanent swamp or seasonal swampy grassland.

The land can be covered with herbaceous vegetation, the chief components being grasses, rushes, sedges and aquatic plants. *Papyrus*, *Phragmites mauritianus*, *Leersia hexandra*, *Pennisetum purpureum*, *Echinochloa crus-pavonis*, *Echinochloa pyramidalis*, *Sporobolus fimbriatus*, *Typha domingensis*, *Pistia stratiotes*, *Nymphaea caerulea*, *Aeschynomene cristata*, *Neonotonia wightii*, *Kotschyia capitulifera*, *Cyperus dives*, *Fuirena umbellata*, *Cyperus articulatus*, *Cyperus involucratus* and *Mimosa pigra* are common.

These areas can be surrounded by much battered open woodland of *Acacia tortilis*, *Acacia sieberiana*, *Kigelia africana*, *Hyphaene compressa*, *Borassus aethiopum*, *Voacanga africana*, *Faidherbia albida*, *Grewia platyclada*, *Acacia polyacantha*, *Azelia quanzensis*.

9e. Deltas at Lake Rukwa

This is a special case to Rukwa-Lukwati GRs which are close to the Lake Rukwa. Here is where the big rivers ie Kavuu, Rungwa and Yeye rivers are entering the Lake and it supports the vegetation community of its kind . It consists of grasses, herbs and lianes, ie *Mimosa pigra*, *Phragmites mauritianus*, *Typha domingensis*, *Aeschynomene cristata* var. *pubescens*, *Neptunia oleracea*, *Neonotonia wightii*, *Conyza pyrrhopappa*, *Leersia hexandra* and *Cyperus dives*.

Due to changing water courses in the deltas these areas are subject to dynamics.

9f. Drainage line grasslands: shallow waterlogged linear depressions along drainage lines (*dambo*)

A “dambo” in Zambia is a shallow grass depression, or small valley, that is either permanently or seasonally waterlogged. It corresponds closely to what is known as a 'vlei' in other parts of the subcontinent. These open, verdant dips in the landscape often appear in the midst of miombo woodlands and support no bushes or trees. In higher valleys amongst hills, they are the sources of streams and rivers. Because of their permanent “dampness”, they are rich in species of grasses, herbs and flowering plants, like orchids – and are excellent grazing (if a little exposed) for antelope. Their margins are usually thickly vegetated by grasses, herbs and smaller shrubs, which then graduate in the typically Miombo woodlands on the better drained soils. Drainage line grasslands like the Zambian *dambos* occur in Katavi-Rukwa in the flat and undulating terrain of the rift valley floor and the plateaus of the elevated areas. The surrounding areas are mixed woodlands or mixed miombo woodlands depending on the altitude. The trees and shrubs can be *Combretum erythrophyllum*, *Mallotus oppositifolius*, *Terminalia kaiserana*, *Phyllanthus engleri*, *Erythrophloeum africanum*, *Sterculia quinqueloba*, *Dichrostachys cinerea*, *Annona senegalensis*, *Combretum molle*, *Combretum zeyheri* and *Lonchocarpus cappasa*. The dominant grasses are *Hyparrhenia diplanda*, *Themeda triandra*, *Eragrostis setulifera*, *Chloris virgata*, *Sporobolus fimbriatus*, *Echinochloa pyramidalis*, *Melinis repens* and *Exothea*.

10. Former Lake Rukwa shore

This type of vegetation around Lake Rukwa can be permanent or seasonal flooded with water of a shallow depth for some periods of the year with some areas where rivers are entering the Lake. The land can be covered with scattered trees of *Acacia xanthophloea* 10 m tall, grasses and herbaceous vegetation. The chief components are grasses, rushes, sedges and aquatic plants: *Phragmites mauritianus*, *Leersia hexandra*, *Pennisetum purpureum*, *Echinochloa crus-pavonis*, *Echinochloa pyramidalis*, *Sporobolus fimbriatus*, *Typha domingensis*, *Aeschynomene cristata*, *Nymphaea caerulea*, *Cyperus articulatus*, *Cyperus dives*, *Cyperus difformis*, *Fimbristylis dichotoma*, and *Cyperus papyrus*,
Shrubs are *Conyza pyrrhopappa*, *Aeschynomene schimperii*, *Mimosa pigra*.

11. Lake Rukwa grassplains

It is an area close to Lake Rukwa consisting of grasses good for grazing animals with emergent trees and shrubs, sometimes it is flooded to shallow depth during the heavy rains. The chief components being *Borassus aethiopum*, *Hyphaene compressa*, *Rauvolfia caffra*, *Cadaba kirkii*, *Salvadora persica*, *Cordia goetzei*, *Cordia sinensis* and the grasses, *Chloris virgata*, *Phragmites mauritianus*, *Themeda triandra*, *Panicum repens*, *Digitaria longiflora*, *Brachiaria brizantha*, *Andropogon gayanus*, *Eragrostis rotifer*, *Oryza longistaminata*, *Cynodon dactylon*, *Leersia hexandra* and *Cyperus dives*.
Here human impact can be strong, as these areas are used by the inhabitants of the fishing camps along Lake Rukwa shore for fire wood collection etc